

# GRNMS National Marine Sanctuary

## Benthic-Pelagic Coupling

### Management Issue

Recreational fishing activities in Gray's Reef National Marine Sanctuary frequently target large pelagic species. Managers need to understand how the extraction of pelagic species impacts bottom associated species.

### Description

Gray's Reef National Marine Sanctuary (GRNMS) is a popular destination for recreational fishing enthusiasts. Many fishermen visiting GRNMS troll or drift-fish for pelagic species, such as king mackerel and greater amberjack. Recent studies have suggested that pelagic fishing can have impacts on benthic communities. Sanctuary managers need better information on how pelagic fishing activities in GRNMS may be impacting species beyond those targeted by the fishery.



A school of pelagic greater amberjack swim along a live bottom ledge. Photo credit: NOAA

### Questions and Information Needs

- 1) What is the level of effort for recreational pelagic fishing activities within the sanctuary?
- 2) Is pelagic fishing compatible with efforts to protect benthic species in GRNMS?
- 3) Do pelagic populations influence the functionality of the benthic communities of GRNMS?
- 4) Does pelagic fishing cause changes in abundance, species composition, and size structure of the benthic community?



Recreational fishermen drop hooks in Gray's Reef National Marine Sanctuary. Photo credit: NOAA

### Scientific Approach and Actions

- Conduct isotope analysis to determine extent of pelagic dependence on benthic organisms
- Conduct diet content studies of targeted pelagic species along with environmental data (depth and habitat type)
- Conduct diet studies of benthic species along with environmental data (depth and habitat type)
- Evaluate overlap in benthic and pelagic diets to determine potential competition for prey
- Develop trophic model for the sanctuary
- Track population characteristics of benthic communities in areas where pelagic fishing occurs and where pelagic fishing is absent

### Key Partners and Information Sources

Georgia Department of Natural Resources, NOAA National Marine Fisheries Service, South Carolina Department of Natural Resources, NOAA Office of Law Enforcement, South Atlantic Fisheries Management Council, Fishing organizations

*Updated: 11/12/2014*

*For More Information -- <http://www.sanctuaries.noaa.gov/science/assessment>*

## Sanctuary Resources Available

- Two research vessels complete with captain and crew
- NOAA ship time
- Support staff for field operations and instrument deployment including science divers
- NDBC buoy located within the boundaries of GRNMS measuring atmospheric, oceanographic, and ocean acidification-related data (pH, CO<sub>2</sub>, and noise)
- Habitat map
- Monitoring data
- Research Area that can serve as control because fishing has been absent for 3 years

## Resource Needs

- Financial support
- Partnerships for: grant application, project design, data collection and analysis, reporting, and monitoring

## Management Support Products

- Analysis of the impacts to benthic communities from pelagic fishing activities.
- Trophic model for GRNMS National Marine Sanctuary
- Scientific papers and reports
- Presentations for scientific meetings, workshops, symposia and conferences
- Education and outreach products to inform general public about the impacts of pelagic fishing activities on benthic communities

## Planned Use of Products and Actions

- Education and outreach products to inform general public about the impacts of pelagic fishing activities on benthic communities
- Recommendations for management actions to address any issues identified with pelagic fish harvesting

## Program References

### GRNMS Management Plan

Objective SR4: Activity SR4A; Objective SR5: Activity SR5A, Activity SR5B

### 2008 GRNMS Condition Report and 2012 Addendum

- Question 9: What is the status of biodiversity and how is it changing?
- Question 11: What is the status of non-indigenous species and how is it changing?
- Question 12: What is the status of key species and how is it changing?
- Question 13: What is the condition or health of key species and how is it changing?
- Question 14: What are the levels of human activities that may influence living resource quality and how are they changing?

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